

INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP 02/03829

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L23/495

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	EP 1 191 589 A (NIPPON ELECTRIC CO) 27 March 2002 (2002-03-27) the whole document	1, 3, 5, 7, 15, 16, 18
X	US 6 040 626 A (CHEAH CHUAN ET AL) 21 March 2000 (2000-03-21) cited in the application column 3, line 47 -column 5, line 51; figures 4, 5, 7, 8	1, 3, 18
X	PATENT ABSTRACTS OF JAPAN vol. 016, no. 492 (E-1278), 12 October 1992 (1992-10-12) -& JP 04 180640 A (NEC YAMAGATA LTD), 26 June 1992 (1992-06-26) the whole document	1-4, 18-20
	--- -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

30 January 2003

Date of mailing of the international search report

07/02/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Zeisler, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 02/03829

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	✓ PATENT ABSTRACTS OF JAPAN vol. 1998, no. 14, 31 December 1998 (1998-12-31) -& JP 10 261756 A (HITACHI LTD; HITACHI TOBU SEMICONDUCTOR LTD), 29 September 1998 (1998-09-29) abstract; figure 7 ---	1, 3, 5, 7, 15, 16, 18
X	✓ US 5 218 231 A (KUDO YOSHIMASA) 8 June 1993 (1993-06-08) the whole document ---	1, 15, 16, 18
A	✓ WO 01 15216 A (HIRASHIMA TOSHINORI ; TAKAHASHI YASUSHI (JP); HITACHI LTD (JP); KAJ) 1 March 2001 (2001-03-01) the whole document ---	1, 15, 16, 18
A	✓ US 5 977 630 A (PEARSON GEORGE ET AL) 2 November 1999 (1999-11-02) the whole document -----	1, 15, 16, 18

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No

PCT/JP 02/03829

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1191589	A	27-03-2002	JP 2002151554 A	24-05-2002
			EP 1191589 A2	27-03-2002
			US 2002047187 A1	25-04-2002
US 6040626	A	21-03-2000	JP 3240292 B2	17-12-2001
			JP 2000114445 A	21-04-2000
			TW 425682 B	11-03-2001
			US 6396127 B1	28-05-2002
JP 04180640	A	26-06-1992	NONE	
JP 10261756	A	29-09-1998	NONE	
US 5218231	A	08-06-1993	JP 1943273 C	23-06-1995
			JP 3085755 A	10-04-1991
			JP 6071062 B	07-09-1994
WO 0115216	A	01-03-2001	JP 3215686 B2	09-10-2001
			JP 2001068503 A	16-03-2001
			WO 0115216 A1	01-03-2001
US 5977630	A	02-11-1999	NONE	